E10 / S6 Power GSM /S8 GSM

Level 2.5

Repair Documentation

V 1.2

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1Introduction

This manual is intended to help you carry out repairs on level 2.5, meaning limited component repairs. Failure highlights are documented and should be repaired in the local workshops.

The E10 and the S6 Power GSM are both handsets for GSM-900. Internally they are almost identical but the form factors of the boards are different.

Note: In some countries the S6 Power GSM is called S6 Classic!

It must be noted that all repairs have to be carried out in an environment set up according to the ESD (Electrostatic Discharge Sensitive Devices) regulations defined in international standards.

If you have any questions regarding the repair procedures or spare parts do not hesitate to contact our technical support team in Kamp-Lintfort, Germany:

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Fax: +49 2842 95 4302
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2VCXO

2.1Affected Units

2.1.1Type: E10 / S6 Power GSM

2.1.2Affected IMEIs / Date Codes: *All / All*

2.1.3Affected SW-Versions: *All*

2.1.4Fault Code for LSO reporting: 3VCX

2.2Fault Description

2.2.1Fault Symptoms for customers:

Network Search
Handset not logging into network

2.2.2Fault Symptom on GSM-Tester:

Frequency error in synchronized mode >90 Hz
No location update possible

The VCXO (Voltage Controlled Crystal Oscillator) is responsible for generating the 13 MHz reference frequency of the handset.
If it is defective, the handset cannot synchronize to the base station anymore.

2.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

2.4Repair Documentation

2.4.1Description of procedure:

2.4.1.1Diagnosis

Check the output frequency of the VCXO using the level-2 testing program for E10 / S6 Power GSM.
Switch off the „CMD in Use“ option in the S611.INI file and restart

the program. Start the test, when the program says „Check power and phase of external antenna with your GSM-Tester“, switch the CMD to „LOCAL“ mode and enter the „MODULE TEST“.
On the CMD display you can see the frequency error of the handset. (Make sure that the CMD is on channel 124, power level 5!)

If the frequency error is higher than 2kHz, the VCXO has to be replaced.

2.4.1.2Repair by component change

Use hot air blower to remove defective VCXO.
Avoid excessive heat!
Watch surrounding components!

Resolder new VCXO afterwards.

2.4.1.3Repair by SW-Booting

Not possible!

2.4.1.4Test

Retest handset after repair as described above.
The frequency error must now be < 2kHz.

2.4.2List of needed material

2.4.2.1Components

VCXO
Part-Number: L36145-G300-Y19

2.4.2.2 Jigs and Tools

Hot Air Blower

Soldering Iron

2.4.2.3Special Tools

None

2.4.2.4Working materials

Desolder Wick / Braid
Solder

2.4.3Drawings

Figure 1: E10 / S6 Power GSM Board VCXO Side

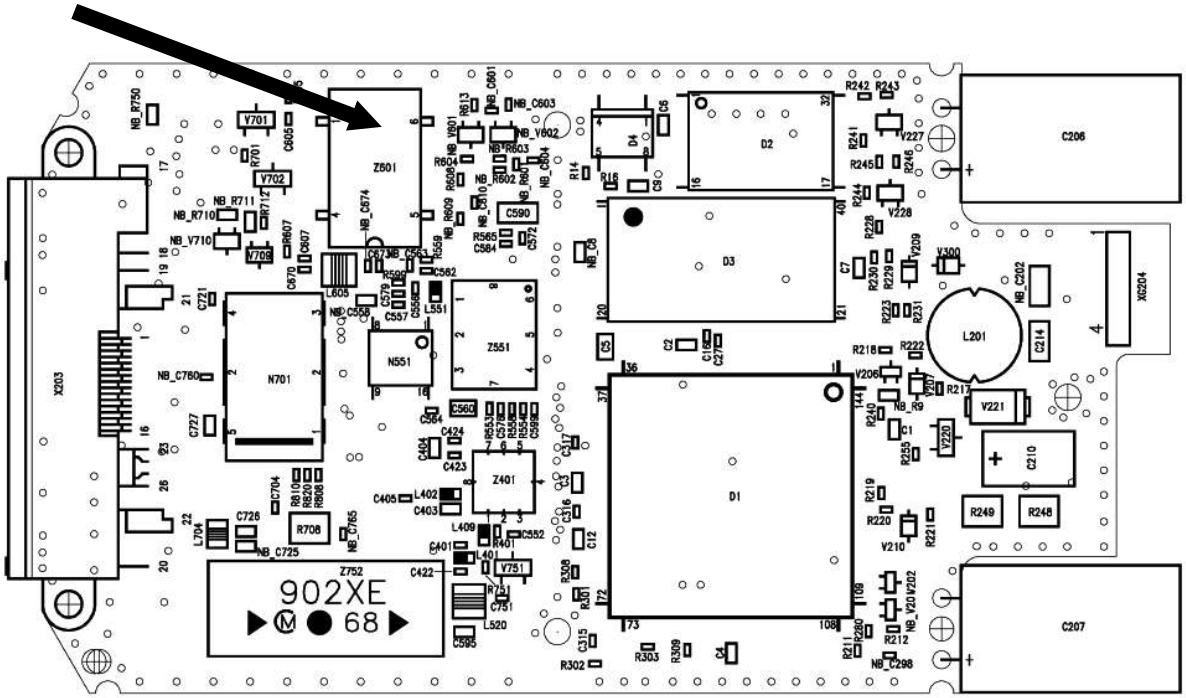
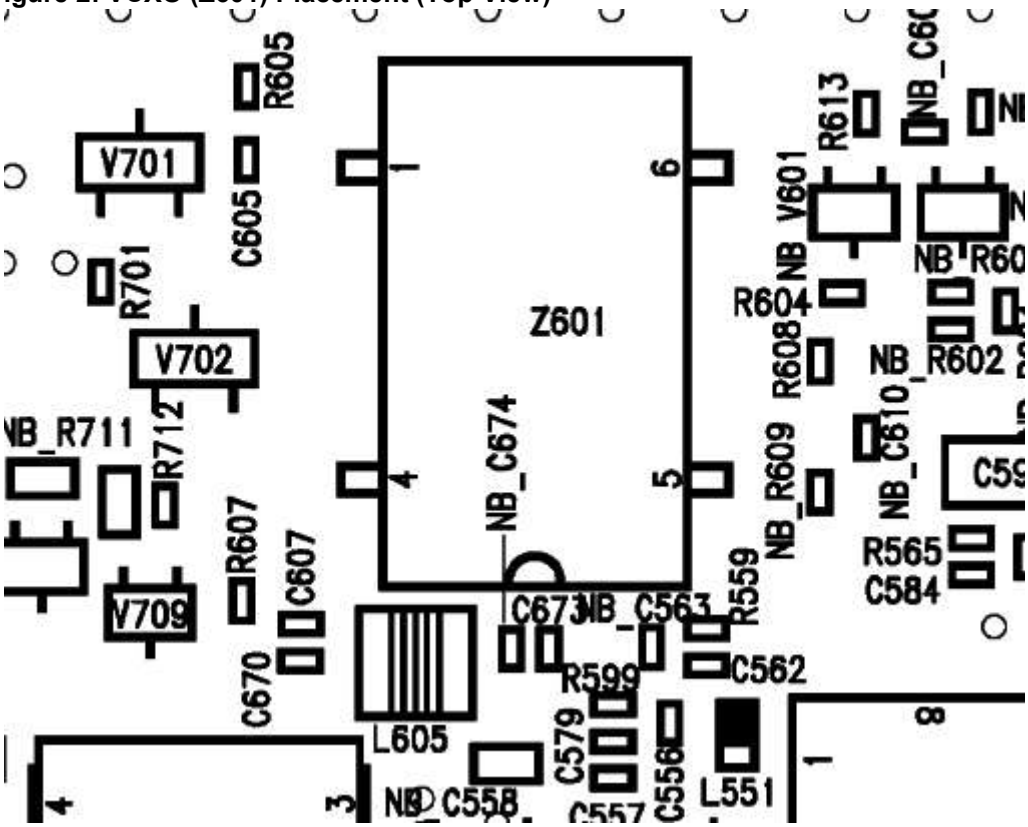


Figure 2: VCXO (Z601) Placement (Top View)



3Fuse 1A

3.1Affected Units

3.1.1Type: **E10 / S6 Power GSM**

3.1.2Affected IMEIs / Date Codes: *All / All*

3.1.3Affected SW-Versions: *All*

3.1.4Fault Code for LSO reporting: 3FU1

3.2Fault Description

3.2.1Fault Symptoms for customers:

Battery charging not possible

3.2.2Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

3.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

3.4Repair Documentation

3.4.1Description of procedure:

3.4.1.1Diagnosis

Check the status of the fuse by measuring its resistance with a multimeter. The fuse is defective if the resistance higher than 10 ohms.

3.4.1.2Repair by component change

Use soldering iron to remove defective fuse.
Avoid excessive heat!
Watch surrounding components!

Resolder new fuse afterwards.

3.4.1.3Repair by SW-Booting

Not possible!

3.4.1.4Test

Retest handset after repair as described above.
The resistance must now be close to zero.

3.4.2List of needed material

3.4.2.1Components

Fuse
Part-Number: L36145-A820-Y7

3.4.2.2Jigs and Tools

Soldering Iron

3.4.2.3Special Tools

Multimeter

3.4.2.4Working materials

Desolder Wick / Braid
Solder

3.4.3Drawings

Figure 1: E10 / S6 Power GSM Board 1A Fuse Side

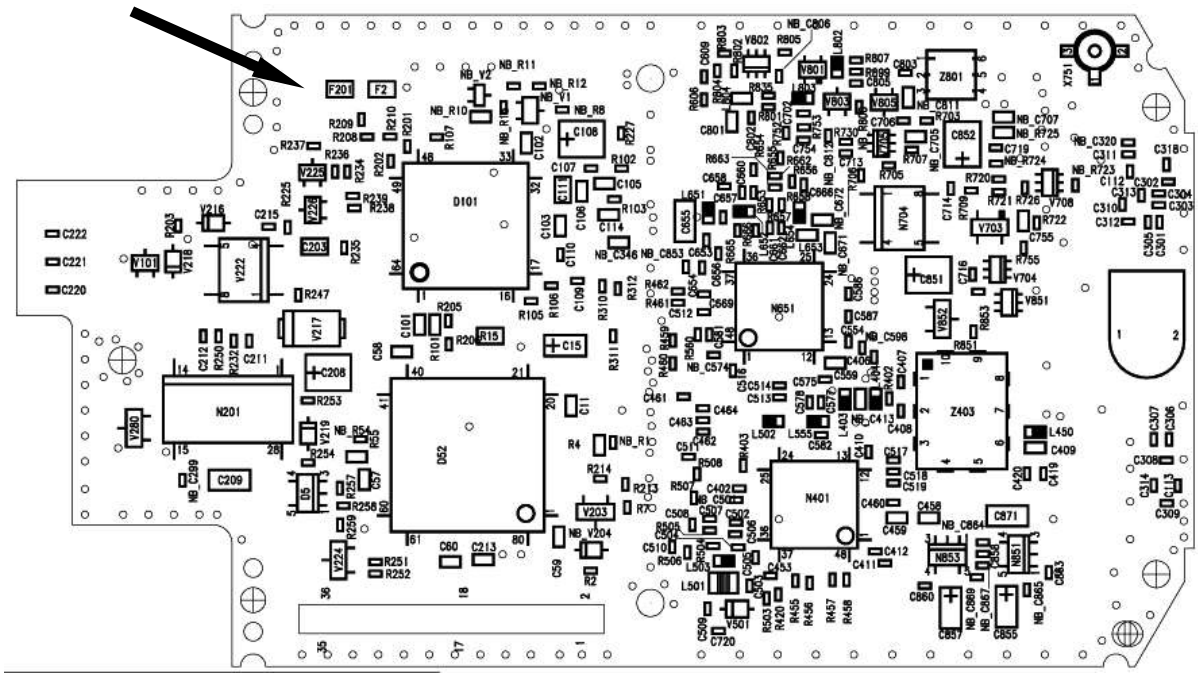
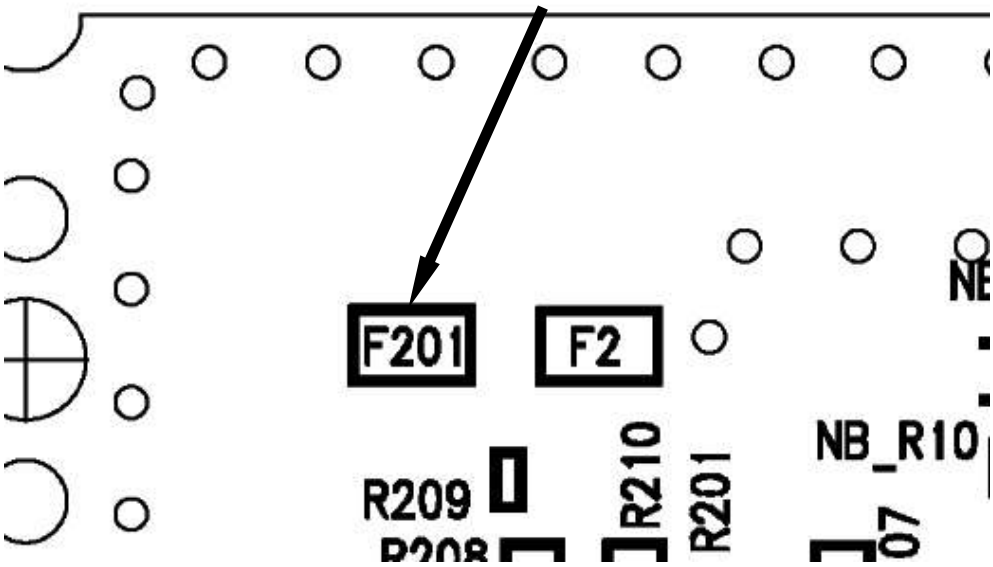


Figure 2: 1A Fuse (F201) Placement (Top View)



4Fuse 0.25 A

4.1Affected Units

4.1.1Type: **E10 / S6 Power GSM**

4.1.2Affected IMEIs / Date Codes: *All / All*

4.1.3Affected SW-Versions: *All*

4.1.4Fault Code for LSO reporting: 3FU2

4.2Fault Description

4.2.1Fault Symptoms for customers:

Supplying of external accessories through the handset's bottom connector is not possible

4.2.2Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

4.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

4.4Repair Documentation

4.4.1Description of procedure:

4.4.1.1Diagnosis

Check the status of the fuse by measuring its resistance with

a multimeter. The fuse is defective if the resistance higher than 10 ohms

4.4.1.2Repair by component change

Use soldering iron to remove defective fuse.
Avoid excessive heat!
Watch surrounding components!

Resolder new fuse afterwards.

4.4.1.3Repair by SW-Booting

Not possible!

4.4.1.4Test

Retest handset after repair as described above.
The resistance must now be close to zero.

4.4.2List of needed material

4.4.2.1Components

Fuse
Part-Number: L36145-A820-Y10

4.4.2.2Jigs and Tools

Soldering Iron

4.4.2.3Special Tools

Multimeter

4.4.2.4Working materials

Desolder Wick / Braid
Solder

4.4.3Drawings

Figure 1: E10 / S6 Power GSM 0.25A Fuse Side

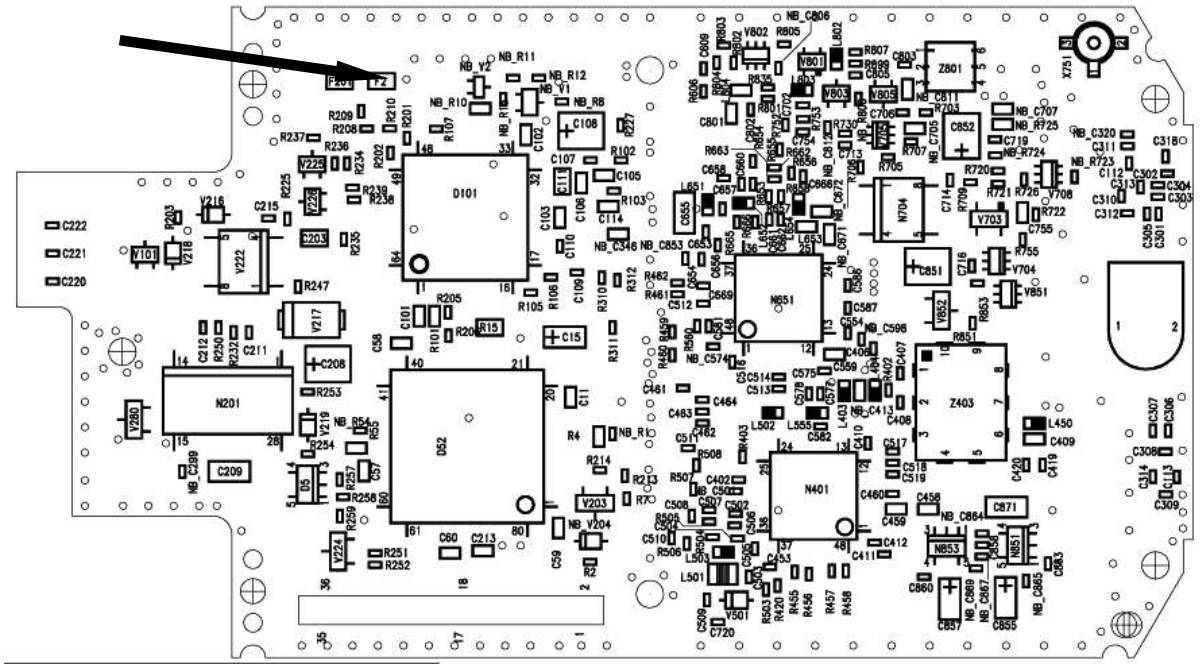
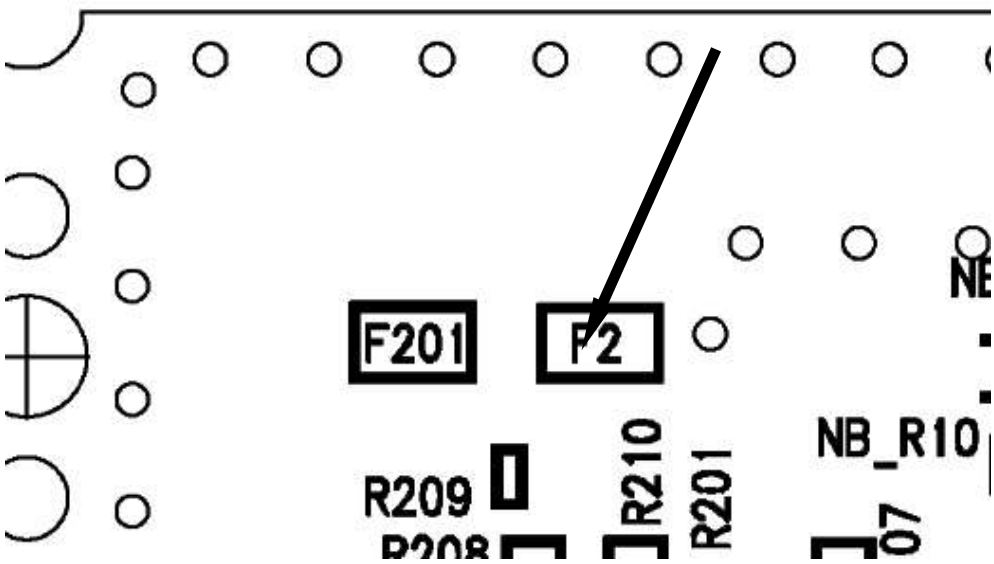


Figure 2: E10 / S6 Power GSM 0.25A Fuse Placement



5Molex Connector

5.1Affected Units

5.1.1Type: **E10 / S6 Power GSM**

5.1.2Affected IMEIs / Date Codes: *All / All*

5.1.3Affected SW-Versions: *All*

5.1.4 Fault Code for LSO reporting: 3MOC

5.2Fault Description

5.2.1Fault Symptoms for customers:

Network search.
Charging or operation in a car kit not possible.

5.2.2Fault Symptom on GSM-Tester:

Output power problems on the external and internal antenna.
No location update possible.

5.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

5.4Repair Documentation

5.4.1Description of procedure:

5.4.1.1Diagnosis

Visually check the bottom connector. Watch for dry joints.

5.4.1.2Repair by component change

Use hot air blower to remove defective connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.
Make sure that you use just very little flux, otherwise the connector contacts can become dirty.

5.4.1.3Repair by SW-Booting

Not possible!

5.4.1.4Test

Retest handset after repair.

5.4.2List of needed material

5.4.2.1Components

Molex Connector
Part-Number: L36851-Z1351-A70

5.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

5.4.2.3Special Tools

None

5.4.2.4Working materials

Desolder Wick / Braid
Solder
Flux

5.4.3Drawings

Figure 1: E10 / S6 Power GSM Board Bottom Connector Side

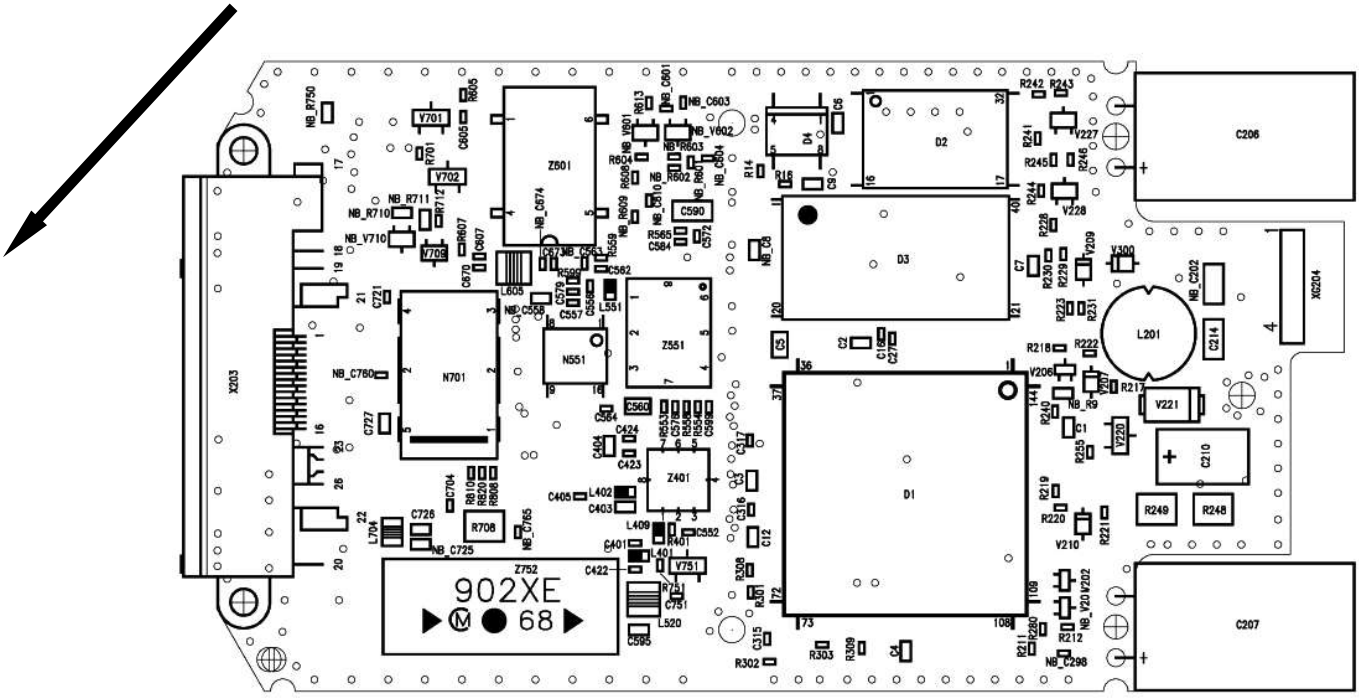
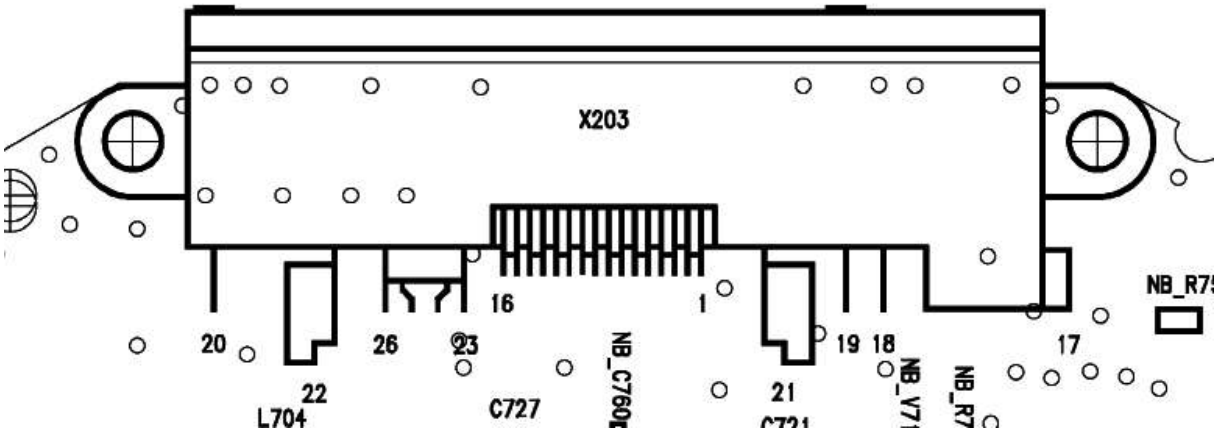


Figure 2: Bottom Connector Placement (Top View)



6Ringer

6.1Affected Units

6.1.1Type: **E10 / S6 Classic MMI**

6.1.2Affected IMEIs / Date Codes: *All / All*

6.1.3Affected SW-Versions: *All*

6.1.4Fault Code for LSO reporting: 3RIN

6.2Fault Description

6.2.1Fault Symptoms for customers:

No ringer tone audible or ringer tone distorted.

6.2.2Fault Symptom on GSM-Tester:

Ringer check fails.

6.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

6.4Repair Documentation

6.4.1Description of procedure:

6.4.1.1Diagnosis

Check ringer functionality either manually or with testing program.

6.4.1.2Repair by component change

Use hot air blower remove defective ringer.
Avoid excessive heat!
Watch surrounding components, especially the display window!
To protect the display, you can also desolder the ringer with solder wick.

Resolder new ringer afterwards.
Watch placement of ringer hole!

6.4.1.3Repair by SW-Booting

Not possible!

6.4.1.4Test

Retest handset after repair.

6.4.2List of needed material

6.4.2.1Components

Ringer
Part-Number: a) E10: L36178-Z2-C14
b) S6 Power GSM: L36178-Z2-C16

6.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

6.4.2.3Special Tools

None

6.4.2.4Working materials

Desolder Wick / Braid
Solder

E10 / S6 Power GSM /S8 GSM

Level 2.5

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1Introduction

This manual is intended to help you carry out repairs on level 2.5, meaning limited component repairs. Failure highlights are documented and should be repaired in the local workshops.

The E10 and the S6 Power GSM are both handsets for GSM-900. Internally they are almost identical but the form factors of the boards are different.

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2VCXO

2.1Affected Units

2.1.1Type: E10 / S6 Power GSM

2.1.2Affected IMEIs / Date Codes: *All / All*

2.1.3Affected SW-Versions: *All*

2.1.4Fault Code for LSO reporting: 3VCX

2.2Fault Description

2.2.1Fault Symptoms for customers:

Network Search
Handset not logging into network

2.2.2Fault Symptom on GSM-Tester:

Frequency error in synchronized mode >90 Hz
No location update possible

The VCXO (Voltage Controlled Crystal Oscillator) is responsible for generating the 13 MHz reference frequency of the handset.
If it is defective, the handset cannot synchronize to the base station anymore.

2.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

2.4Repair Documentation

2.4.1Description of procedure:

2.4.1.1Diagnosis

Check the output frequency of the VCXO using the level-2 testing program for E10 / S6 Power GSM.
Switch off the „CMD in Use“ option in the S611.INI file and restart

the program. Start the test, when the program says „Check power and phase of external antenna with your GSM-Tester“, switch the CMD to „LOCAL“ mode and enter the „MODULE TEST“.
On the CMD display you can see the frequency error of the handset. (Make sure that the CMD is on channel 124, power level 5!)

If the frequency error is higher than 2kHz, the VCXO has to be replaced.

2.4.1.2Repair by component change

Use hot air blower to remove defective VCXO.
Avoid excessive heat!
Watch surrounding components!

Resolder new VCXO afterwards.

2.4.1.3Repair by SW-Booting

Not possible!

2.4.1.4Test

Retest handset after repair as described above.
The frequency error must now be < 2kHz.

2.4.2List of needed material

2.4.2.1Components

VCXO
Part-Number: L36145-G300-Y19

2.4.2.2 Jigs and Tools

Hot Air Blower

Soldering Iron

2.4.2.3Special Tools

None

2.4.2.4Working materials

Desolder Wick / Braid
Solder

2.4.3Drawings

Figure 1: E10 / S6 Power GSM Board VCXO Side

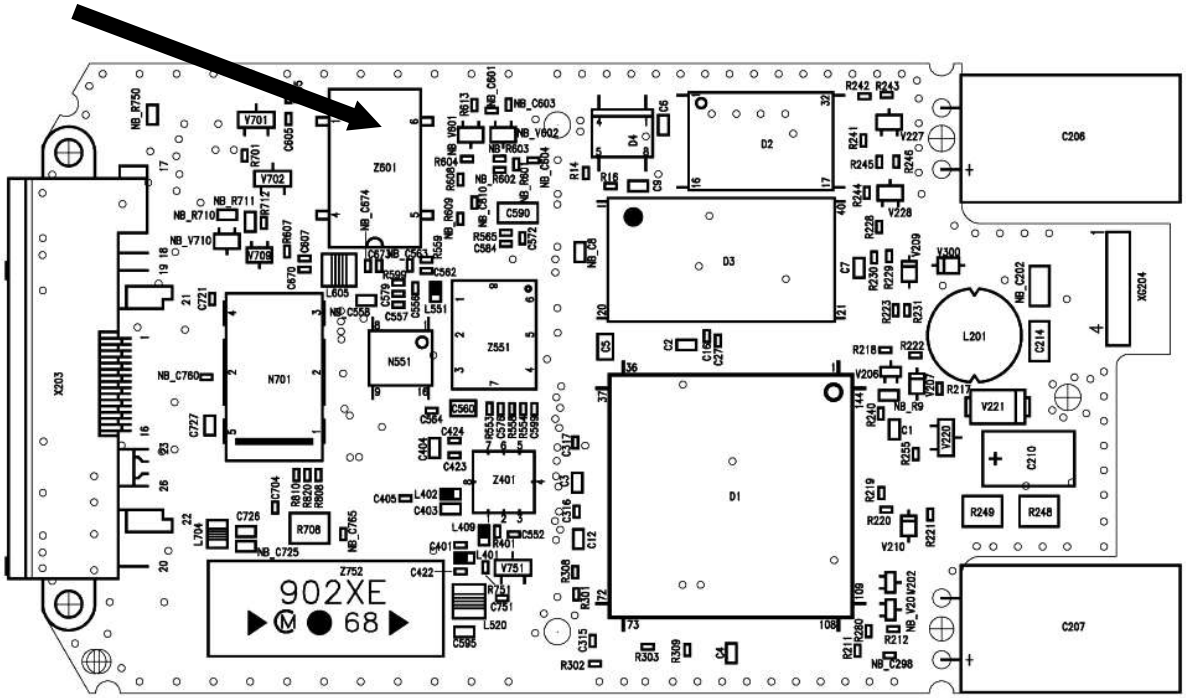
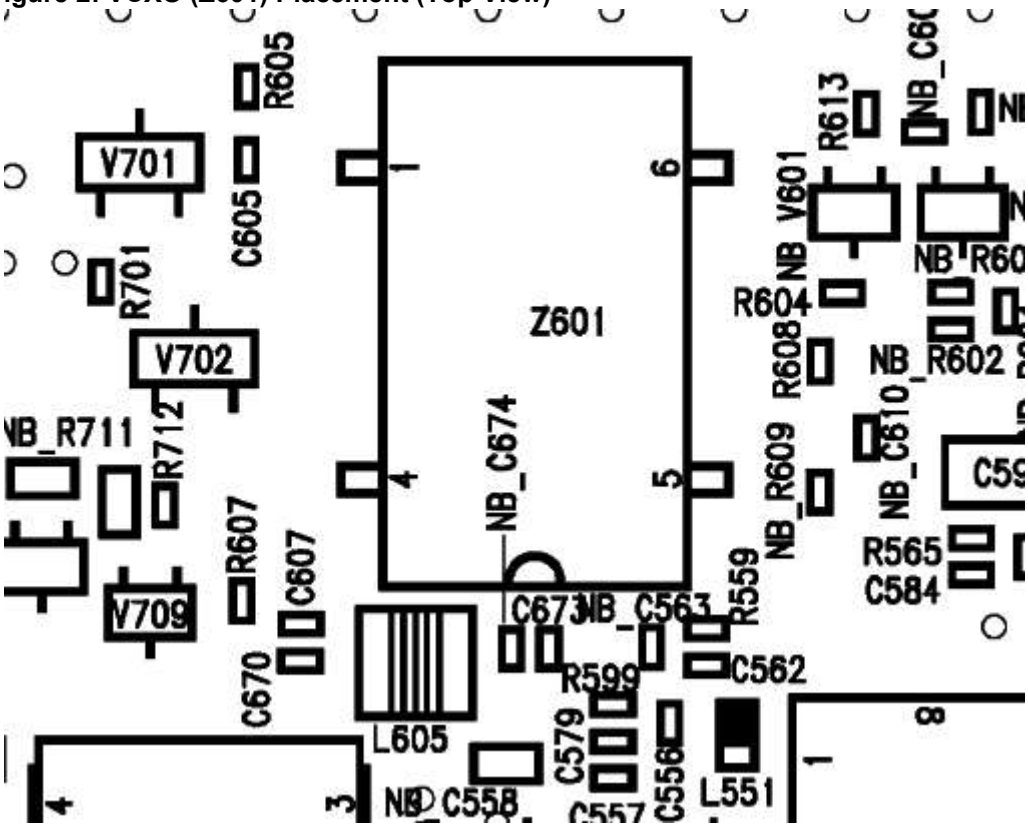


Figure 2: VCXO (Z601) Placement (Top View)



3Fuse 1A

3.1Affected Units

3.1.1Type: **E10 / S6 Power GSM**

3.1.2Affected IMEIs / Date Codes: *All / All*

3.1.3Affected SW-Versions: *All*

3.1.4Fault Code for LSO reporting: 3FU1

3.2Fault Description

3.2.1Fault Symptoms for customers:

Battery charging not possible

3.2.2Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

3.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

3.4Repair Documentation

3.4.1Description of procedure:

3.4.1.1Diagnosis

Check the status of the fuse by measuring its resistance with a multimeter. The fuse is defective if the resistance higher than 10 ohms.

3.4.1.2Repair by component change

Use soldering iron to remove defective fuse.
Avoid excessive heat!
Watch surrounding components!

Resolder new fuse afterwards.

3.4.1.3Repair by SW-Booting

Not possible!

3.4.1.4Test

Retest handset after repair as described above.
The resistance must now be close to zero.

3.4.2List of needed material

3.4.2.1Components

Fuse
Part-Number: L36145-A820-Y7

3.4.2.2Jigs and Tools

Soldering Iron

3.4.2.3Special Tools

Multimeter

3.4.2.4Working materials

Desolder Wick / Braid
Solder

3.4.3Drawings

Figure 1: E10 / S6 Power GSM Board 1A Fuse Side

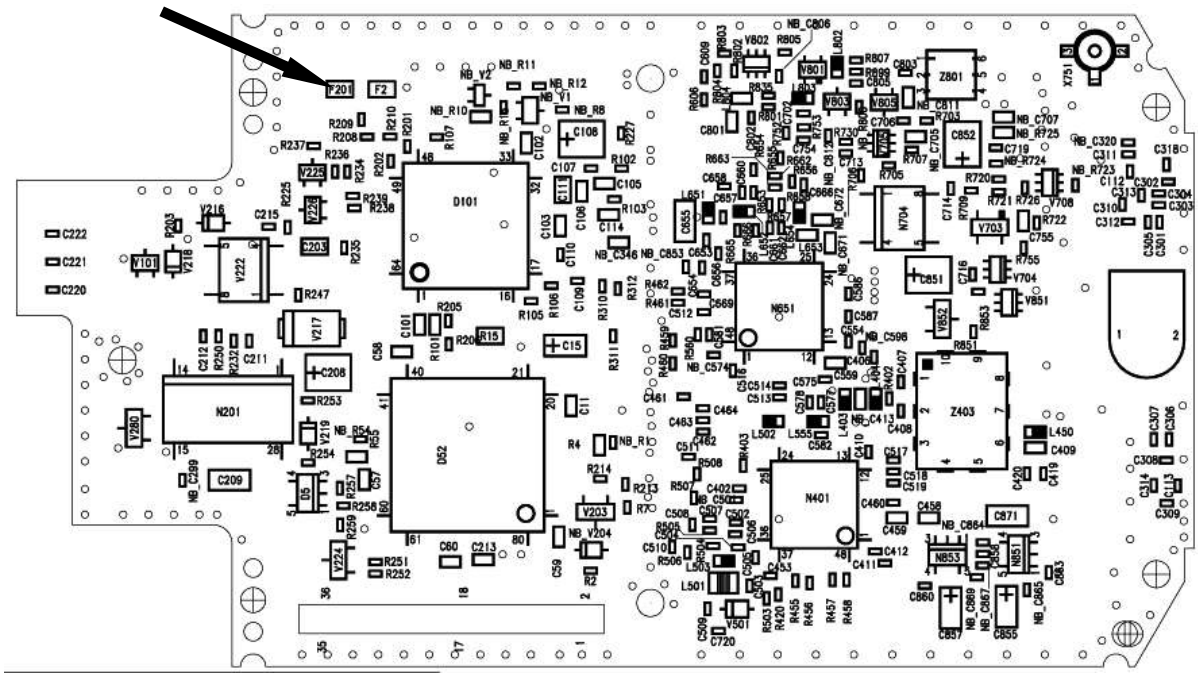
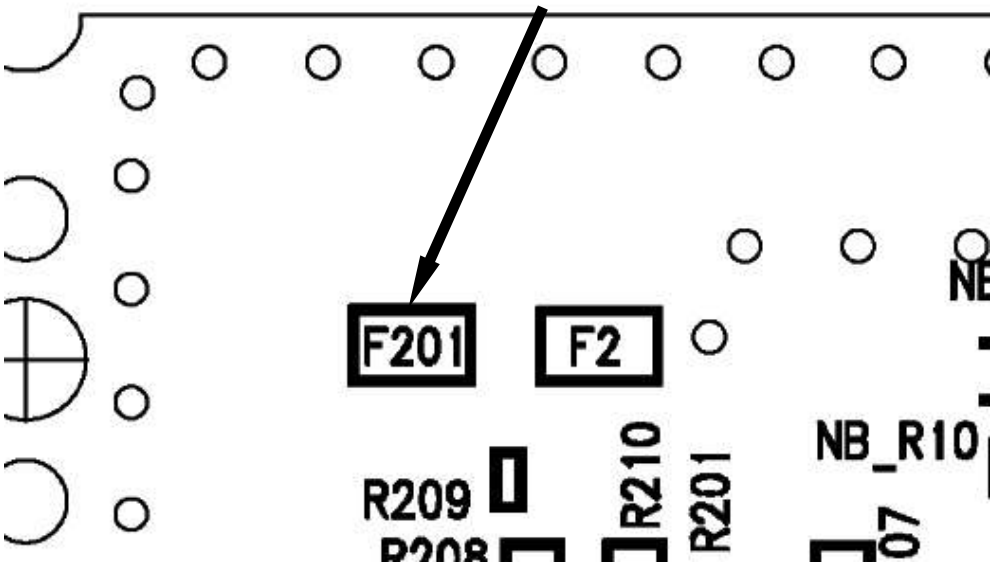


Figure 2: 1A Fuse (F201) Placement (Top View)



4Fuse 0.25 A

4.1Affected Units

4.1.1Type: **E10 / S6 Power GSM**

4.1.2Affected IMEIs / Date Codes: *All / All*

4.1.3Affected SW-Versions: *All*

4.1.4Fault Code for LSO reporting: 3FU2

4.2Fault Description

4.2.1Fault Symptoms for customers:

Supplying of external accessories through the handset's bottom connector is not possible

4.2.2Fault Symptom on GSM-Tester:

This fault cannot be detected with a GSM-Tester

4.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

4.4Repair Documentation

4.4.1Description of procedure:

4.4.1.1Diagnosis

Check the status of the fuse by measuring its resistance with

a multimeter. The fuse is defective if the resistance higher than 10 ohms

4.4.1.2Repair by component change

Use soldering iron to remove defective fuse.
Avoid excessive heat!
Watch surrounding components!

Resolder new fuse afterwards.

4.4.1.3Repair by SW-Booting

Not possible!

4.4.1.4Test

Retest handset after repair as described above.
The resistance must now be close to zero.

4.4.2List of needed material

4.4.2.1Components

Fuse
Part-Number: L36145-A820-Y10

4.4.2.2Jigs and Tools

Soldering Iron

4.4.2.3Special Tools

Multimeter

4.4.2.4Working materials

Desolder Wick / Braid
Solder

4.4.3Drawings

Figure 1: E10 / S6 Power GSM 0.25A Fuse Side

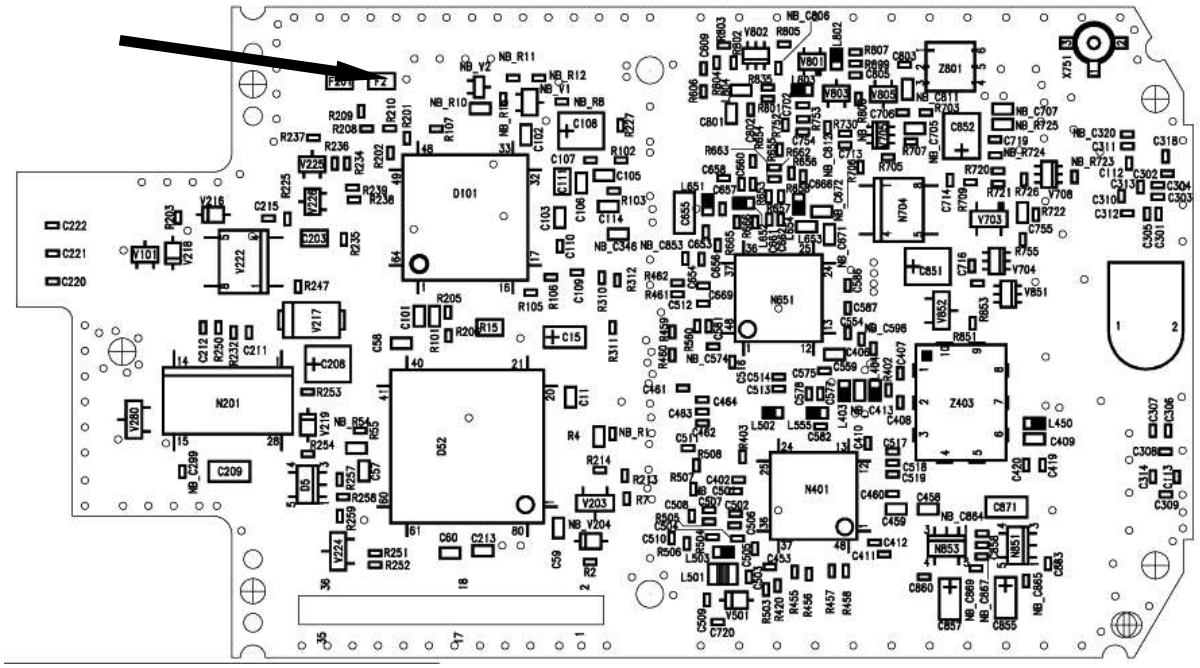
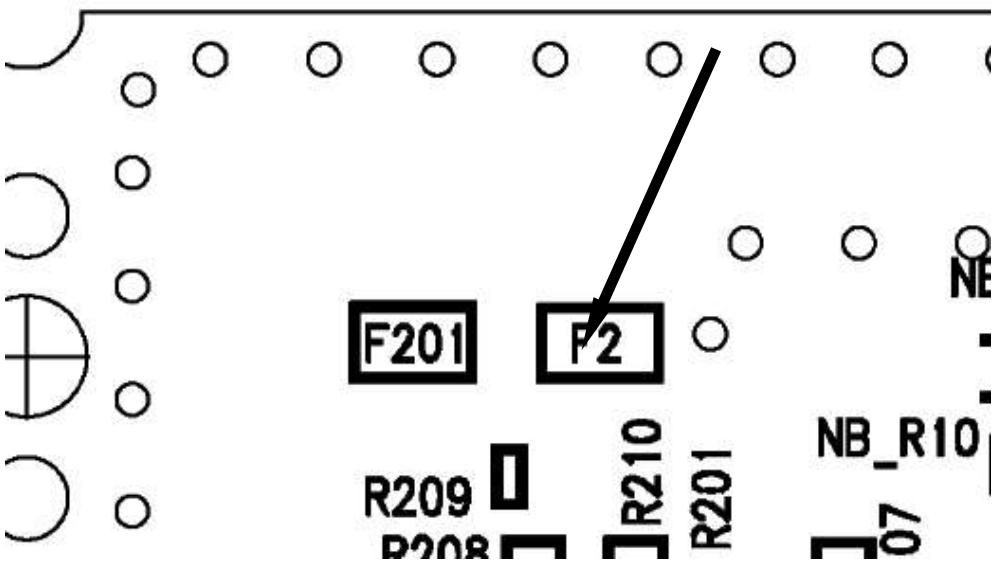


Figure 2: E10 / S6 Power GSM 0.25A Fuse Placement



5Molex Connector

5.1Affected Units

5.1.1Type: **E10 / S6 Power GSM**

5.1.2Affected IMEIs / Date Codes: *All / All*

5.1.3Affected SW-Versions: *All*

5.1.4 Fault Code for LSO reporting: 3MOC

5.2Fault Description

5.2.1Fault Symptoms for customers:

Network search.
Charging or operation in a car kit not possible.

5.2.2Fault Symptom on GSM-Tester:

Output power problems on the external and internal antenna.
No location update possible.

5.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

5.4Repair Documentation

5.4.1Description of procedure:

5.4.1.1Diagnosis

Visually check the bottom connector. Watch for dry joints.

5.4.1.2Repair by component change

Use hot air blower to remove defective connector.
Avoid excessive heat!
Watch surrounding components!

Resolder new connector afterwards.
Make sure that you use just very little flux, otherwise the connector contacts can become dirty.

5.4.1.3Repair by SW-Booting

Not possible!

5.4.1.4Test

Retest handset after repair.

5.4.2List of needed material

5.4.2.1Components

Molex Connector
Part-Number: L36851-Z1351-A70

5.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

5.4.2.3Special Tools

None

5.4.2.4Working materials

Desolder Wick / Braid
Solder
Flux

5.4.3Drawings

Figure 1: E10 / S6 Power GSM Board Bottom Connector Side

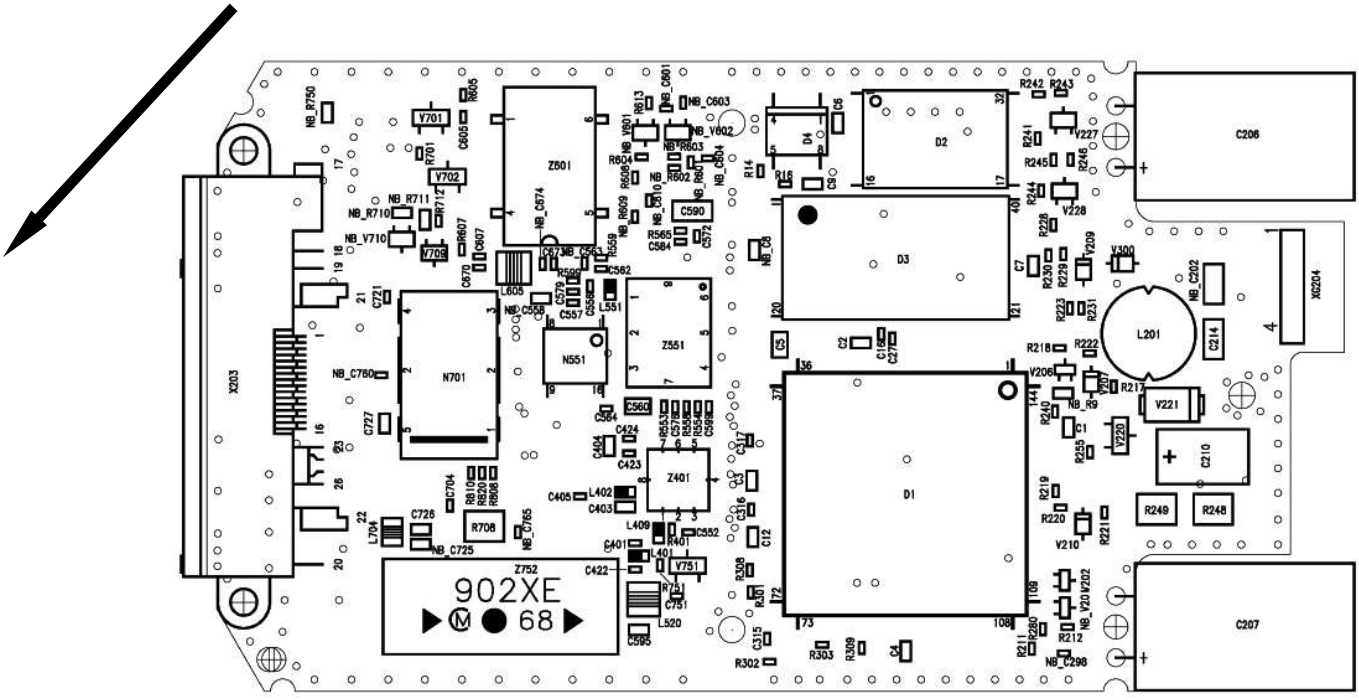
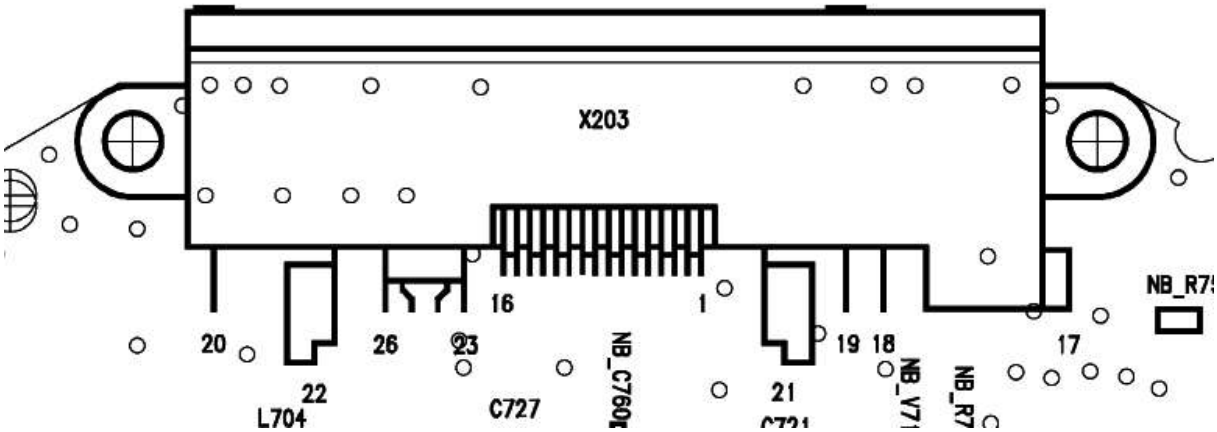


Figure 2: Bottom Connector Placement (Top View)



6Ringer

6.1Affected Units

6.1.1Type: **E10 / S6 Classic MMI**

6.1.2Affected IMEIs / Date Codes: *All / All*

6.1.3Affected SW-Versions: *All*

6.1.4Fault Code for LSO reporting: 3RIN

6.2Fault Description

6.2.1Fault Symptoms for customers:

No ringer tone audible or ringer tone distorted.

6.2.2Fault Symptom on GSM-Tester:

Ringer check fails.

6.3Priority:

☐ ..... Mandatory
☒ ..... Repair
☐ ..... Optional
☐ ..... Not Yet Defined

6.4Repair Documentation

6.4.1Description of procedure:

6.4.1.1Diagnosis

Check ringer functionality either manually or with testing program.

6.4.1.2Repair by component change

Use hot air blower remove defective ringer.
Avoid excessive heat!
Watch surrounding components, especially the display window!
To protect the display, you can also desolder the ringer with solder wick.

Resolder new ringer afterwards.
Watch placement of ringer hole!

6.4.1.3Repair by SW-Booting

Not possible!

6.4.1.4Test

Retest handset after repair.

6.4.2List of needed material

6.4.2.1Components

Ringer
Part-Number: a) E10: L36178-Z2-C14
b) S6 Power GSM: L36178-Z2-C16

6.4.2.2Jigs and Tools

Hot Air Blower
Soldering Iron

6.4.2.3Special Tools

None

6.4.2.4Working materials

Desolder Wick / Braid
Solder